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PLANNING THE PRODUCTION OF VEGETABLES AND FODDER
ON FARMS SUPPLYING LOCAL MARKETS IN YUGOSLAVIA

The needs for vegetables and other products not included in the system of guaranteed supply in Yugoslavia, which should be supplied primarily by urban and other farms supplying local markets, will be considered here on the basis of regulations governing the diet necessary to maintain life and working capacity for adults.

Food products under the guaranteed supply system, such as meats, fats, etc., will be considered only insofar as they are produced by these farms as by-products of livestock production on such farms.

Each adult should receive the following quantities of vegetables per month: 8 kilograms of potatoes, 4 kilograms of beans, 12 kilograms of cabbage (or any leafy vegetable such as kale, lettuce, etc., or tomatoes, green peppers, etc.), and 4 kilograms of onions (or garlic or leeks). Although potatoes as a high starch content food are extremely important in the diet, there is no need for urban and other farms supplying local markets to produce the entire amount of 8 kilograms monthly or 96 kilograms annually needed per person. This supply should be procured from wholesale production, and only early potatoes should be produced on these farms. It would be sufficient for these farms to produce a 2-month supply of potatoes, or 16 kilograms per person annually.

The production of beans in quantities of 4 kilograms per person per month or 48 kilograms yearly is not planned for these farms, but should be procured from wholesale production.

Urban and other farms supplying local markets should grow green peas and string beans instead. They should be grown here since they are perishable and, therefore, should be produced near consumer centers. It would be sufficient for these farms to produce a 1½ months' supply of green peas, based on a ration of 8 kilograms per person per month, or a total of 12 kilograms per person. A 2½ months' supply of string beans should be produced, based on a ration of 8 kilograms per month, or a total of 20 kilograms per person.

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Cabbage, kale, lettuce, spinach, etc., and tomatoes, green peppers, etc., should be grown on the basis of 12 kilograms per month, or 144 kilograms annually per person.

These farms should grow onions, garlic, or leeks, insuring a monthly supply of 4 kilograms per person, or 48 kilograms annually.

The acreage necessary to produce the above quantities of vegetables for 10,000 inhabitants would be as follows:

| <u>Kg of Vegetables per Person</u> | <u>Type of Vegetable</u> | <u>Kg for 10,000 Inhabitants</u> | <u>Av Yield per Ha (kg)</u> | <u>Needed Acreage (ha)</u> | <u>Percent of Total Acreage</u> |
|------------------------------------|--------------------------|----------------------------------|-----------------------------|----------------------------|---------------------------------|
| 16 | Potatoes | 160,000 | 7,000 | 23 | 7 |
| 12 | Green peas | 120,000 | 2,000 | 60 | 18 |
| 20 | String beans | 200,000 | 3,000 | 66 | 20 |
| 144 | Cabbage, etc. | 1,440,000 | 15,000 | 96 | 30 |
| 48 | Onions | 480,000 | 8,000 | 80 | 25 |
| Total 240 | | 2,400,000 | 35,000 | 325 | 100 |

The yields per hectare used in the preceding example are below the average yields prescribed by agricultural manuals, but represent the average yields achieved in Yugoslavia to date.

Since vegetables cannot be grown without manure and fertilizer, it is necessary to plan for areas on which fodder will be produced for livestock, which in turn will produce manure for vegetable garden. The total cultivated areas would therefore be apportioned as follows: vegetables 35 percent, fodder crops 35, and grain crops 30.

Therefore, to produce 240 freight carloads of vegetables on an area of 325 hectares, a sowing area of approximately 1,000 hectares would be needed. Such an area should have 350 milk cows, 50 horses, 100 breeding sows, 750 hogs for fattening, 2,000 hens, and 1,000 rabbits.

This hypothetical farm would thus have all the characteristics of a vegetable and livestock farm.

Figuring that a milk cow will yield 2,100 liters of milk annually, 350 cows would yield 735,000 liters of milk annually, or 0.2 liter per person daily. The requirements for milk would thus be fulfilled completely.

One hundred breeding sows would produce sufficiently to supply 750 fattening hogs annually, which would be used as additional food rations.

Two thousand hens would yield 240,000 eggs, or 24 eggs per person annually, as additional food rations.

One thousand rabbits would yield 1,000 kilograms of meat annually, or 0.1 kilogram per person. Although this is a very small amount of meat, the rabbits would be bred because they consume rejected greens which are abundant on such farms.

Assuming that the farm would be well mechanized, 50 horses would be sufficient to take care of all other needs. They would be used for work and to provide warm manure for use in greenhouses.

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To provide hay and straw, green and grain fodder for the livestock, the following amounts should be produced annually (in quintals):

| | <u>Per Animal</u> | <u>For Indicated Number</u> |
|---------------------|-------------------|-----------------------------|
| 350 milk cows: | | |
| Bulk fodder | 33 | 11,550 |
| Green fodder | 73 | 22,550 |
| Total | | 34,100 |
| 100 breeding sows: | | |
| Bulk fodder | 4 | 400 |
| Green fodder | 11 | 1,100 |
| Grain fodder | 5 | 500 |
| Total | | 2,000 |
| 750 fattening hogs: | | |
| Grain | 5 | 3,750 |
| 2,000 hens: | | |
| Grain | 0.3 | 600 |
| 50 horses: | | |
| Bulk fodder | 36 | 1,800 |
| Green fodder | 15 | 750 |
| Total | | 2,550 |

There is no need to plan for special food for 1,000 rabbits since there will be sufficient quantities of rejected vegetables and other greens.

The above fodder needs are for milk cows 500 kilograms in live weight with a milk yield of 7 liters daily, and for early-maturing sows, such as Yorkshire and Berkshire. A 6-month grain supply is included for fattening hogs.

With an average yield of 50 quintals of bulk fodder per hectare, 274 hectares would be required to produce the total bulk fodder needed for the cows, sows, and horses. With an average yield of 200 quintals of green fodder per hectare, 118 hectares would be required to produce the total green fodder necessary for the cows and sows. With an average yield of 20 quintals of corn per hectare, 176 hectares would be required to produce the total corn necessary for the sows and fattened hogs. With an average yield of 15 quintals of barley per hectare, 75 hectares would be required to produce the barley necessary for the sows, fattened hogs, and hens. With an average yield of 14 quintals per hectare, 78 hectares would be required to produce the oats necessary for the horses and hens.

The livestock described above will produce the following quantities of manure annually (in quintals):

| | <u>Per Animal</u> | <u>For Indicated Number</u> |
|--------------------|-------------------|-----------------------------|
| 350 cows | 120 | 42,000 |
| 100 sows | 18 | 1,800 |
| 750 fattening hogs | 16 | 12,000 |
| 2,000 hens | 0.055 | 110 |
| 1,000 rabbits | 1 | 1,000 |
| 50 horses | 100 | 5,000 |
| Total | | 61,910 |

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If 240 quintals of manure are sufficient to fertilize one hectare, 257 hectares could be fertilized in one year with the manure produced, or 1,028 hectares -- the entire area -- in 4 years.

Such fertilization would be sufficient to maintain normal soil fertility for farm crops, but much more manure is needed for growing vegetables. Therefore, it would be necessary to use in addition, all types of waste found on such a farm as well as chemical fertilizers.

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